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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/589,764

Filing Date: August 17, 2006

Appellant(s): KOSLOV, JOSHUA LAWRENCE

Joseph J. Opalach
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 07/23/2010 appealing from the Office action mailed 12/07/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:
1-27.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

| | | |
|--------------|--------------|---------|
| US 7,499,507 | Jaffe et al. | 3-2009 |
| WO 02/089371 | Chen, E.C | 11-2002 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 1-18 (method) & 19-27 (apparatus) are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (WO 02/089371 A1) in view of Jaffe et al. (7,499,507).

In regards to Claims 1-2, 9, 23-24, Chen discloses a method for use in a receiver (Fig.'s 4A-B), the method comprising: receiving a multi-level modulation signal having, at least two signal layers (Fig.'s 4A-B & Page 2, lines 5-30 & Page 3, lines

12-19} {Interpretation: The reference discloses receiving a multi-level modulation i.e. 16QAM having at least two layers i.e. lower layer and upper layer modulation}; recovering a carrier from the received multi-level modulation signal as a function of decisions with respect to a first layer of the at least two layers (Fig.'s 4A-B, element 402, 410 & Page 2, lines 5-15 & Page 7, line 23-to-Page 10, line 18 & Claim 6) {Interpretation: The reference discloses recovering a carrier for both the upper and lower layer wherein the lower layer carrier is recovered after decoding the upper layer Viterbi decoder i.e. the reference discloses recovering a carrier of the lower layer (element 410) as a function of decisions with respect to a first layer (output element 402); and using the recovered carrier to recover a different layer of the at least two signal layers (Fig.'s 4A-B, element 408). However, Chen does not explicitly disclose the viterbi decoder to be a soft decision decoder.

Jaffe discloses a method for use in a receiver for receiving a satellite signals (Fig. 1 & Fig. 3) comprising a viterbi decoder to be a soft decision decoder (Fig. 3, element 301 & Abstract, lines 8-19 & Column 3, lines 36-62) {Interpretation: The reference discloses implementing a soft decision viterbi decoder over a hard decision decoder (slicer) to decode encoded signals}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Jaffe teaches a soft decision viterbi decoder to decode encoded signals in a receiver and this is implemented in the receiver as described in Chen so as to be able to reliably decode multilayer signals in a low signal to noise ratio channel environment.

In regards to Claim 3, 10-12, 16-21, 25-34, Chen in view of Jaffe discloses a method (apparatus) (apparatus) for use in a receiver as described above. Chen further discloses the recovering step further comprises: demodulating the first layer of the received layered modulation signal to provide a demodulated first layer signal representing a stream of signal points (Fig.'s 4A-B, element 404); soft decoding the demodulated first layer signal to provide a decoded first layer signal (Fig.'s 4A-B, element 402 & Page 8, lines 1-10); generating a remapped first layer signal from the decoded first layer signal, the remapped first layer signal representing a stream of symbols (Fig. 4B, element 406, 418); recovering a carrier from the received layered modulation signal using the remapped first layer signal and processing the received layered modulation signal with the recovered carrier to extract therefrom a second layer of the at least two layers of the received layered modulation signal (Fig. 4B, element 412). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Chen in view of Jaffe satisfies the limitation of the claim. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the receiver is implemented as an integrated circuit so as to minimize the physical space and further increase reliability do to minimum connections.

In regards to Claims 4-5, 7-8, 13, 15, 22, Chen in view of Jaffe discloses a method for use in a receiver as described above. Chen further discloses the generating step includes the steps of: re-encoding the decoded first layer signal to provide a re-encoded first layer signal (Fig. 4B, element 406); and remapping the re-

encoded first layer signal to provide the remapped first layer signal (Fig. 4B, element 418). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Chen in view of Jaffe satisfies the limitation of the claim. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the process of regenerating the upper level signal includes rerotating and filtering and then subtracting the upper layer signal to isolate the lower layer signal from the combined signal.

In regards to Claims 6, 14, 28 & 35, Chen in view of Jaffe discloses a method for use in a receiver as described above. Chen further discloses the recovering step includes the step of filtering the received layered modulation signal for removing intersymbol interference associated with the first layer signal (Fig. 4B, element 418 & Page 8, lines 9-13) {Interpretation: The reference discloses estimating the distortion effects which is interpreted as intersymbol interference}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Chen in view of Jaffe satisfies the limitation of the claim.

(10) Response to Argument

3. Applicant's arguments filed in the appeal brief dated 07/23/2010 have been fully considered but they are not persuasive.

In regards to the specific arguments (Appeal Brief, Page 11) "Nowhere does claim 6 of Chen refer to recovering a carrier - let alone recovering a carrier as claimed by Applicant".

In response Chen clearly discloses this claimed feature "recovering (demodulating) a carrier from the received multi-level modulation signal as a function of decisions with respect to a first layer of the at least two layers (Fig.'s 4A-B, element 402,410 & Page 2, lines 5-15 & Page 7, line 23-to-Page 10, line 18 & Claim 6) {Interpretation: The reference discloses recovering (demodulating) a carrier for both the upper and lower layer wherein the lower layer carrier is recovered after decoding the upper layer Viterbi decoder i.e. the reference discloses recovering a carrier of the lower layer (element 410) as a function of decisions with respect to a first layer (i.e., upper layer, see output of element 402)}. The recovered carrier is used to recover a different layer (i.e., lower layer, see output of element 408) of the at least two signal layers. Furthermore, the instant application in Fig. 7, element 375 (LL demodulator) performs the carrier recovery as recited in the claim language.

In regards to the specific arguments (Appeal Brief, Page 11) "Again, nowhere does this passage from Chen describe, or even suggest, recovering a carrier - let alone recovering a carrier as a function of soft decisions claimed by Applicant".

In response Chen clearly discloses this claimed feature "recovering (demodulating) a carrier from the received multi-level modulation signal as a function of decisions with respect to a first layer of the at least two layers (Fig.'s 4A-B, element 402,410 & Page 2, lines 5-15 & Page 7, line 23-to-Page 10, line 18 & Claim 6) {Interpretation: The reference discloses recovering (demodulating) a carrier for both the upper and lower layer wherein the lower layer carrier is recovered after decoding the upper layer Viterbi decoder i.e. the reference discloses recovering

a carrier of the lower layer (element 410) as a function of decisions with respect to a first layer (i.e., upper layer, see output of element 402)). The recovered carrier is used to recover a different layer (i.e., lower layer, see output of element 408) of the at least two signal layers. However, Chen does not explicitly disclose the viterbi decoder to be a soft decision decoder.

Jaffe discloses a method for use in a receiver for receiving a satellite signals (Fig. 1 & Fig. 3) comprising a viterbi decoder to be a soft decision decoder (Fig. 3, element 301 & Abstract, lines 8-19 & Column 3, lines 36-62} {Interpretation: The reference discloses implementing a soft decision viterbi decoder over a hard decision decoder (slicer) to decode encoded signals}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Jaffe teaches a soft decision viterbi decoder to decode encoded signals in a receiver and this is implemented in the receiver as described in Chen so as to be able to reliably decode multilayer signals in a low signal to noise ratio channel environment (motivation to combine). Furthermore, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In regards to the arguments presented in the rest of the Appeal Brief, they are similar to the arguments presented above.

In response the Office requests to see the above "Response to Arguments".

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Sudhanshu C Pathak/

Primary Examiner, Art Unit 2611

Conferees:

/CHIEH M FAN/

Supervisory Patent Examiner, Art Unit 2611

/Shuwang Liu/

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